WHAT IS CLAIMED IS:

1. In a computer network arrangement comprising a home network having at least one home network server and a firewall for protecting said home network server, a relay server outside of said home network, and a client having a permanent IP address within said home network, a method for maintaining secure communications between the home network server and the client when said client roams outside of said home network to a new location, said method comprising:

establishing a new IP address for the new client location;

sending a registration message to said relay server identifying said new IP address location;

authenticating said registration message;

encapsulating and transmitting said registration message to said home server;

registering said new IP address as a care-of-address for said client at said home server;

confirming the registration of said new IP address with said client;

establishing a security association between said home server and said relay server on behalf of said client;

performing network address translation between the client's permanent IP address and the client's new IP address;

tunneling packets addressed for said client between said home server and said relay server based on the established security association and said address translation for said client; and

decapsulating said packets at said relay server and forwarding said packets to said

client.

2. The method of claim 1, wherein said home network further comprises a multiplexer subsystem.

3. The method of claim 1, wherein at least a portion of the communications from said
5   client to said home server are in HTTP Request-format.

4. The method of claim 3, wherein at least a portion of the communications from said home server to said client are in HTTP Response-format.

5. The method of claim 4, wherein at least a portion of the communications from said client to said home server are encapsulated in UDP packets.

10   6. The method of claim 5, wherein at least a portion of the communications from said home server to said client are encapsulated in UDP packets.

7. The method of claim 1, wherein said method further comprises the step of: providing a network gateway, wherein said network gateway operates to tunnel packets through said firewall to said home server.

15   8. The method of claim 7, wherein said network gateway is a Virtual Private Network gateway.

9. In a computer network arrangement comprising a home network having at least one home network server and a firewall for protecting said home network server, a relay server outside of said home network, and a client having a permanent IP address within said
20   home network, a method for maintaining secure communications between the home network server and the client when said client roams outside of said home network to a new location, said method comprising:

establishing a new IP address for the new client location;

sending a registration message to said home server identifying said new IP address location;

encapsulating and transmitting said registration message to said home server;

registering said new IP address as a care-of-address for said client at said home

5   server;

confirming the registration of said new IP address with said client;

establishing a security association between said home server and said client;

performing network address translation between the client's permanent IP address and the client's new IP address; and

10   tunneling packets addressed for said client between said home server and said client based on the established security association and said address translation for said client.

10. The method of claim 9, wherein said home network further comprises a multiplexer subsystem.

11. The method of claim 9, wherein at least a portion of the communications from

15   said client to said home server are in HTTP Request-format.

12. The method of claim 11, wherein at least a portion of the communications from said home server to said client are in HTTP Response-format.

13. The method of claim 12, wherein at least a portion of the communications from said client to said home server are encapsulated in UDP packets by said multiplexer

20   subsystem.

14. The method of claim 13, wherein at least a portion of the communications from said home server to said client are encapsulated in UDP packets by said multiplexer subsystem.

15. The method of claim 9, wherein said method further comprises the step of: providing a network gateway, wherein said network gateway operates to tunnel packets through said firewall to said home server.

16. The method of claim 15, wherein said network gateway is a Virtual Private Network gateway.

17. A system for maintaining secure communications for a client having a permanent IP address within a home network system and a temporary, care-of IP address when roaming outside of said home network system, said system comprising:

a home network server, wherein said home network server authenticates messages received from clients roaming outside of said home network system and performs network address translation between the client's permanent IP address client and the client's registered care-of IP address, further wherein said home network server encapsulates and retransmits messages addressed to said client's permanent IP address to the client's registered care-of IP address;

a relay server, said relay server located outside of said home network, wherein said relay server tunnels messages between said home network server and said client; and

a multiplexer subsystem, wherein said multiplexer subsystem is comprised of a HTTP server, and a multiplexer module.

18. A method for communicating between a roaming client and a home server wherein at least one of either the client or the home server is protected by a firewall, said method comprising:

generating a first message in HTTP Request-format,

transmitting said first message in HTTP Request-format through said firewall;

processing said first message, wherein said first message is encapsulated in UDP packets and forwarded to its intended recipient;

generating a second message in response to said first message, wherein said second message is encapsulated in UDP packets;

5   translating said second message into HTTP Response-Format;

transmitting said second message to its intended recipient.

19. The method of claim 1, wherein, said method further comprises the steps of:

generating a first message in HTTP Request-format,

transmitting said first message in HTTP Request-format through said firewall;

10   processing said first message, wherein said first message is encapsulated in UDP packets and forwarded to its intended recipient;

generating a second message in response to said first message, wherein said second message is encapsulated in UDP packets;

translating said second message into HTTP Response-Format; and

15   transmitting said second message to its intended recipient

20. The method of claim 9, wherein, said method further comprises the steps of:

generating a first message in HTTP Request-format,

transmitting said first message in HTTP Request-format through said firewall;

processing said first message, wherein said first message is encapsulated in UDP

20   packets and forwarded to its intended recipient;

generating a second message in response to said first message, wherein said second message is encapsulated in UDP packets;

translating said second message into HTTP Response-Format; and

transmitting said second message to its intended recipient